

REMARKS/ARGUMENTS

Initially, Applicants would like to their express appreciation to the Examiner for the detailed Official Action provided, for the acknowledgment of Applicants' Information Disclosure Statement by return of the Form PTO-1449, and for the acknowledgment of Applicants' Claim for Priority and receipt of the certified copy of the priority document in the Official Action. However, Applicants note that the Examiner has not acknowledged that the drawings are acceptable, and it is requested that the Examiner indicate the same in the next Official Action.

Upon entry of the above amendments claims 1, 6, 8 and 10-13 will have been amended. Claims 1-17 are currently pending, with claims 1-7 being withdrawn from consideration in a previous Official Action. Applicants respectfully request reconsideration of the outstanding objection and rejections, and allowance of all the claims pending in the present application.

In the Official Action, the Examiner reiterated the previous restriction requirement, withdrew claims 1-7 from examination, and made the restriction requirement final. Applicants respectfully traverse the restriction requirement for the reasons already made of record.

Furthermore, Applicants note that the Examiner appears to have already considered/searched many of the features recited in claims 1-7. For example, on page 3, reference numeral 3 of the Official Action, the Examiner asserts that YLILAMMI et al. (U.S. Patent No. 6,839,946) discloses, inter alia, an electrode material layer for forming an upper electrode above the piezoelectric film, and a

mask of a predetermined form on the electrode material layer. Further, on page 5 of the Official Action, the Examiner asserts that YLILAMMI teaches using silicone oxide as a protective coating. In this regard, Applicants note that each of the aforementioned features are generally recited in claims 1 and 2, respectively.

Additionally, the fact that claim 8 formerly depended from claim 1, claim 10 formerly depended from claim 2, claim 11 formerly depended from claim 3, claim 12 formerly depended from claim 4, and claim 13 formerly depended from claim 5, provides further evidence that the Examiner has already considered at least the features of claims 1-5, in addition to claims 8-17, which have been examined on their merits. Accordingly, the Applicants' request that the Examiner reconsider the finality of the restriction requirement, and withdraw the same.

In the Official Action, the Examiner rejected claims 8-17 under 35 U.S.C. § 103(a) as being anticipated by IRIE et al. (U.S. Patent No. 6,903,491) in view of YLILAMMI.

Although Applicants do not necessarily agree with the Examiner's rejection of the claims on these grounds, nevertheless, Applicants have amended claim 8 to even more clearly provide a basis obviating the above-noted grounds of rejection, merely in order to expedite prosecution of the present application.

In this regard, Applicants note that IRIE and YLILAMMI fail to teach or suggest the combination of elements as recited in amended claim 8. In particular, claim 8 as amended, sets forth a piezoelectric thin film resonator including, inter alia, wherein before providing the electrode material layer, a protective layer, for protecting the piezoelectric film during etching of the

electrode material layer, is formed so as to cover an entire upper surface of the piezoelectric film, and then providing the electrode material layer so as to cover the protective layer; and wherein the upper electrode is formed on the protective layer.

Applicants submit that IRIE and YLILAMMI, alone or in any proper combination, lack any disclosure of the above-noted combination of elements.

In this regard, the Examiner cites to IRIE as purportedly disclosing a method of manufacturing a piezoelectric thin film resonator wherein after forming a piezoelectric film on a substrate so as to cover a lower electrode formed on the substrate, an electrode material layer for forming an upper electrode, above the piezoelectric film, is provided (see page 3, paragraph number 3, of the Official Action). Further, the Examiner acknowledges that IRIE does not disclose before providing the electrode material layer, a protective layer, for protecting the piezoelectric film during etching of the electrode material layer, is formed so as to cover at least a portion of the piezoelectric film, and the electrode material layer is formed so as to cover the protective layer (see page 4, lines 1-6, of the Official Action). Nevertheless, the Examiner takes the position that it would have been obvious to supply the deficiencies of IRIE with the purported teachings of YLILAMMI. In particular, the Examiner asserts that YLILAMMI discloses forming a second protective layer on a structure to protect the piezoelectric layer (see page 4, lines 7-11, of the Official Action).

However, YLILAMMI only discloses that selected portions of the resonator (FBAR) and the surrounding wafer being covered by depositing a second

protective layer of SiO₂ (51) via, for example, a plasma-enhanced chemical vapor deposition (CVD). The SiO₂ layer (51) is then patterned in fluorine plasma (F plasma) to form a contact area on a top portion of the ZnO layer (52). Then, the top electrode layer 54 is formed over the contact area and over portions of the second layer of SiO₂ (51). Thereafter, selected portions of the second layer of SiO₂ (51) and selected portions of the first SiO₂ layer (48) are patterned to form vias (via 49' is shown in FIG. 2b) [see Col. 6, lines 24-39].

In other words, the protective layer (51), as disclosed in YLILAMMI, is formed such that only a selection portion of, but not the entire, upper surface of the piezoelectric film (52) is covered [as illustrated in Fig. 2b, which shows the electrode 54 contacting the remainder of the upper surface of the ZnO layer (52)]. Therefore, YLILAMMI cannot overcome the admitted shortcoming of IRIE, and IRIE and YLILAMMI do not disclose, in the claimed combination, a protective layer covering an entire upper surface of the piezoelectric film, and an upper electrode formed on the protective layer, as recited in amended claim 8.

Further, Applicants submit that at least one advantage of the above-noted feature of an embodiment of the present disclosure is that, by providing the protective layer so as to cover an entire upper surface of the piezoelectric film, the piezoelectric film is protected from corrosion caused by an etching solution.

Thus, even assuming, arguendo, that the teachings of IRIE and YLILAMMI have been properly combined; the proposed combination still would not have resulted in the features of an embodiment of the present disclosure, as recited in

amended claim 8. Accordingly, the rejection of claims 8-17 under 35 U.S.C. § 112 is improper, and should be withdrawn.

Further, Applicants note that claim 8 has been rewritten in independent form to include the limitations of claim 1, from which it formerly depended, and to recite the feature of *the protective layer covering an entire upper surface of the piezoelectric film, and the upper electrode being formed on the protective layer.* In this regard, Applicants rewrote claim 8 in independent form to render the scope of the claims clearer.

In view of the amendments and arguments herein, Applicants submit that independent claim 8 is in condition for allowance. With regard to dependent claims 9-17, Applicants assert that they are allowable on their own merit, as well as because they depend from independent claim 8, which Applicants have shown to be allowable.

Thus, it is respectfully submitted that all of the claims in the present application are clearly patentable over the references cited by the Examiner, either alone or in combination, and an indication to such effect is respectfully requested, in due course.



SUMMARY

Applicants submit that the present application is in condition for allowance, and respectfully request an indication to that effect. Applicants has argued the allowability of the claims and pointed out deficiencies of the applied references. Accordingly, reconsideration of the outstanding Official Action and allowance of the present application and all the claims therein are respectfully requested and is now believed to be appropriate.

Applicants note that this amendment is being made to advance prosecution of the application to allowance, and should not be considered as surrendering equivalents of the territory between the claims prior to the present amendment and the amended claims. Further, no acquiescence as to the propriety of the Examiner's rejection is made by the present amendment.

All other amendments to the claims which have been made in this amendment, and which have not been specifically noted to overcome a rejection based upon the prior art, should be considered to have been made for a purpose unrelated to patentability (e.g., for clarification and/or cosmetic purposes), and no estoppel should be deemed to attach thereto.

Should the Examiner have any questions, the Examiner is invited to contact the undersigned at the below-listed telephone number.

Respectfully submitted,
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